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A Revision of the Baridine Weevils of the Genus *Limnobaris*
BEDEL (Coleoptera, Curculionidae) from Japan
and Neighbouring Countries^{1),2)}

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Abstract The weevil genus *Limnobaris* from Japan, Korea, North East China and Far East Russia comprises four species. *L. japonica* sp. nov. from northern Japan has been recorded as *L. jucunda* due to misidentification. True *L. jucunda* REITTER occurs in Korea, North East China and Far East Russia. *L. albosparsa* REITTER is newly recorded from Japan. Distribution of *L. babai* CHÛJÔ et MORIMOTO is restricted to Japan. A key to species and descriptions for each species are provided together with illustrations of important characters.

Key words: *Limnobaris*; Japan, Korea, North East China and Far East Russia; Curculionidae.

Introduction

The genus *Limnobaris* BEDEL of the subfamily Baridinae comprises 34 species on record, of which 7 species are from the Palearctic Region, a species from Vietnam, and the rest from Mexico to Venezuela. In relation to the discontinuous distribution of the genus as stated, further examinations are necessary for their systematic position of the New World species, because 25 species originally described in this genus by CASEY (1892) from America, north of Mexico were all transferred to other genera thenceforth.

In the eastern Palearctic area including Japan, Korea, North East China and Far East Russia, REITTER (1910) described *L. jucunda* and *albosparsa* from Ussuri,

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2) Contribution from the Russia/Japan Cooperative East Asian Entomological Program, No. 34.

3) Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 4., No. 60).

and CHÛJÔ and MORIMOTO (1959) described *L. babai* from Japan and recorded *L. jucunda* from Japan for the first time. But, the last record is revealed to have been based on misidentification upon our present study and is newly described as *L. japonica* in this paper.

The present paper deals with four species from the mentioned area including a key to the species, and descriptions, illustrations of important characters and photographs for each species.

Material employed in the present study is mainly from the collections of the Entomological Laboratory of Kyushu University, the late Dr. K. BABA, Mr. Y. HIRANO, the authors, and partly from the collections made by the Korea-Japan Co-operative Science Program in Korea and by the Russia/Japan Cooperative East Asian Entomological Program in Russia. Messrs. O. YAMAJI and K. NOJIMA kindly offered *L. albosparsa* from Okayama Prefecture, Japan, for our study.

Genus *Limnobaris* BEDEL, 1885

Limnobaris BEDEL, 1882–88, Fn. Coléopt. bassin Seine, 6: 183 (1885), 347 (1887) [Type species: *Curculio T-album* LINNAEUS, 1758, by original designation].—REITTER, 1895, Best.-Tab., 33: 6, 30.—CHAMPION, 1908, Biol. Centr.-Amer. Coleopt., 4 (5): 343.—HUSTACHE, 1938, Coleopt. Cat., (163): 113.—HOFFMANN, 1954, Fn. France, 59: 1053, 1082.—MORIMOTO, 1962, J. Fac. Agric., Kyushu Univ., 12: 46.—BAITENOV, 1974, Weevils of Central Asia and Kazakstan: 222.—SMRECZYŃSKI, 1974, Klucze Oznac. Owad. Pol., 19 (98 e): 26.—LOHSE, 1983, Käf. Mitteleuropas, 11: 177.—PÉRICART, 1989, Fn. France, 74: 241.—DIECKMANN, 1991, Beitr. Ent., Berlin, 41: 303.

See HUSTACHE (1938) for other references.

Body elongate. Rostrum cylindrical, not separated from frons by depression, about as long as pronotum. Antennae inserted into the middle part of rostrum, scape almost reaching the anterior margin of eye, 2nd segment of funicle distinctly longer than 3rd, club oblong, evenly pubescent all over. Pronotum parallel-sided or weakly narrowed posteriorly in basal half. Scutellum apparent. Elytra slightly broader than pronotum, parallel-sided, each provided with ten striae, subapical swellings obsolete. Pygidium concealed by elytra. Legs with femora unarmed, not sulcate beneath, hind femora not exceeding the apex of elytra, fore tibiae not longer than the posteriors, sometimes armed with a spine at the middle of inner margin in male, middle and hind tibiae unarmed, third segment of tarsi strongly bilobed. Claws free, simple. Underside of body sometimes densely covered with whitish or yellowish scales. Prosternum neither foveate nor tuberculate, with a deep submarginal transverse sulcus. Fore coxae narrowly separated.

All known records of the host plants are sedge of the family Cyperaceae in marshy ground and the larvae live in the rhizome.

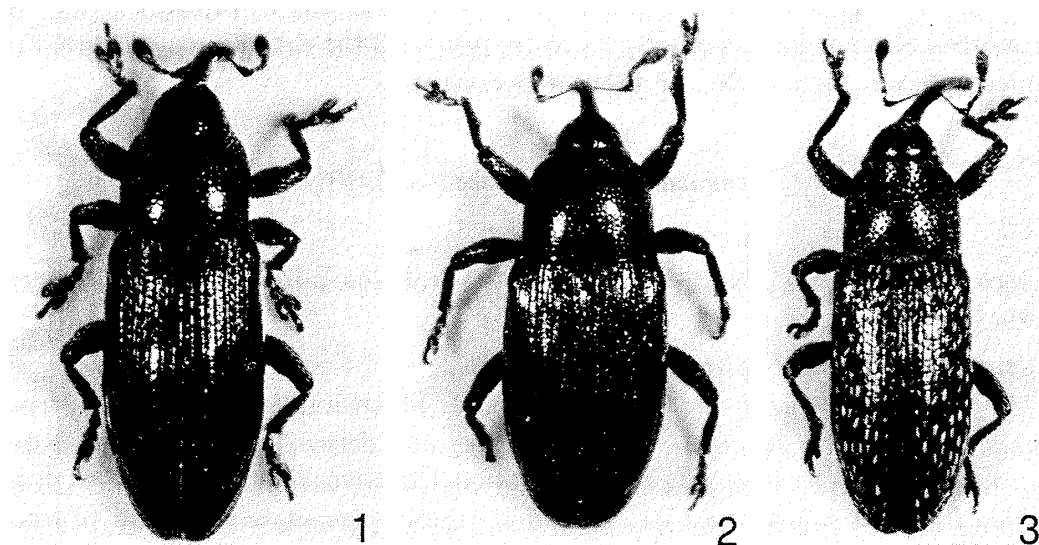
Limnobaris japonica sp. nov.

(Figs. 1, 4–8, 21)

Limnobaris jucunda: CHÛJÔ and MORIMOTO, 1959 (nec REITTER, misident.), Kontyû, Tokyo, **27**: 153, fig. 4.—MORIMOTO, 1962, Sci. Bull. Fac. Agric., Kyushu Univ., **19**: 196.—NAKANE, 1963, Icon. Ins. Japon. Col. nat. ed., **2**: 375, pl. 188, fig. 11.—MORIMOTO, 1984, Coleopt. Japan Col., Osaka, **4**: 311.

Length: 3.0–4.1 mm. Breadth: 1.1–1.5 mm.

Male. Shiny black; antennae and tarsi dark brown. Head minutely punctate. Rostrum moderately robust, nearly as long as pronotum, evenly and weakly curved, subequal in thickness from the base to the apex, shiny and minutely punctate on dorsal surface, with punctures denser and coarser on lateral surfaces. Antennae inserted slightly beyond the middle of rostrum, funicle with 1st segment as long as three following segments combined, 2nd segment 1.2 times as long as wide and 1.6 times as long as the 3rd, 3rd to 7th segments subequal in length and gradually widening distally, club oval, half as long as funicle. Pronotum nearly as long as wide, widest at the middle, anterior margin truncate, $5/8$ times as broad as posterior margin which is shallowly bisinuate, disc with small punctures, interstices between them a little narrower than the diameter, each puncture at lateral sides accompanied with a small grayish scale, median impunctate line distinct in entire length. Scutellum oval, longer than broad, with a few minute scales at sides. Elytra 1.9 times as long as broad, 2.6 times as long as pronotum, a little broader than pronotum, nearly parallel-sided in basal two-thirds, then narrowed posteriorly, striae narrow, intervals flat, each with a row of minute punctures, 3rd to 6th intervals each with a row of whitish narrow scales on basal one-third, elytral suture fringed with minute whitish scales throughout. Lateral and ventral sides densely covered with yel-



Figs. 1–3. *Limnobaris* spp. — 1, *L. japonica* sp. nov.; 2, *L. babai* CHÛJÔ et MORIMOTO; 3, *L. albosparsa* REITTER.

lowish gray oval scales concealing derm completely except for almost bare median areas of metasternum and first two ventrites, these areas weakly depressed longitudinally and sparsely with brown minute setae, 3rd to 5th ventrites bare along anterior margins, 5th ventrite with the grayish scales smaller in the median area behind the middle. Legs with femora and tibiae unarmed, sparsely covered with grayish scaly hairs. Second segment of tarsi nearly as long as broad.

Female. Similar to male, but separable from it by the following points: Rostrum slightly longer than in male. First and 2nd ventrites flattened at the middle.

Distribution. Japan (Hokkaido, Honshu).

Holotype: ♂ (Type no. 2920, Kyushu Univ.), Yunomata, Ohata-machi, Shimokita, Aomori Pref., 29. vii. 1956, K. MORIMOTO leg.

Paratypes: 4 ♂♂, 6 ♀♀, Yukomanbetsu, Mt. Daisetsu, Hokkaido, 24. vii. 1955, K. MORIMOTO leg.; 1 ♀, same locality, 29. vii. 1955, K. MORIMOTO leg.; 5 ♂♂, 5 ♀♀, Aizankei, Mt. Daisetsu, Hokkaido, 27. vii. 1955, K. MORIMOTO leg.; 2 ♂♂, same locality, 29. vii. 1955, K. MORIMOTO leg.; 1 ♀, Nakatonbetsu, Hokkaido, 8. vii. 1977, K. BABA leg.; 1 ♀, Lake Rausu, nr. Mt. Rausu, Hokkaido, 23. vii. 1961, Y. ASANO leg.; 1 ♂, 1 ♀, Nishioka-Suigen, Toyohira-ku, Sapporo City, Hokkaido, 9. vi. 1992, K. MIYASHITA leg.; 5 ♀♀, Yunomata, Ohata-machi, Aomori Pref., 29. vii. 1956, K. MORIMOTO leg.; 1 ♀, River Akaishigawa, Ajigasawa-machi, Aomori Pref., 9. vi. 1974, A. ABE leg.; 12 ♂♂, 7 ♀♀, Hiratakinuma, Aomori Pref., 16. vi. 1992, K. YOSHIHARA leg.; 1 ♂, Iide-machi, Yamagata Pref., 21. vi. 1977, K. BABA leg.; 1 ♀, Kurokawa, Niigata Pref., 29. v. 1976, K. BABA leg.; 1 ♂, same locality, 10. vi. 1976, K. BABA leg.; 1 ♂, Miomote, Niigata Pref., 28. v. 1980, K. BABA leg.; 1 ♀, Shirokochizawa, nr. Renge spa, Niigata Pref., 30. vii. 1976, K. BABA leg.

Biology. Adults were captured on *Carex thunbergii* STEUD. (Azesuge in Japanese) and other species of sedge at the lakeshore or marshy land by sweeping.

Remarks. This species is similar to *L. jucunda* REITTER in dorsal aspect, but the grayish scales are much denser on prosternum, and the densely scaled areas are not interrupted in the middle of 3rd and 4th ventrites.

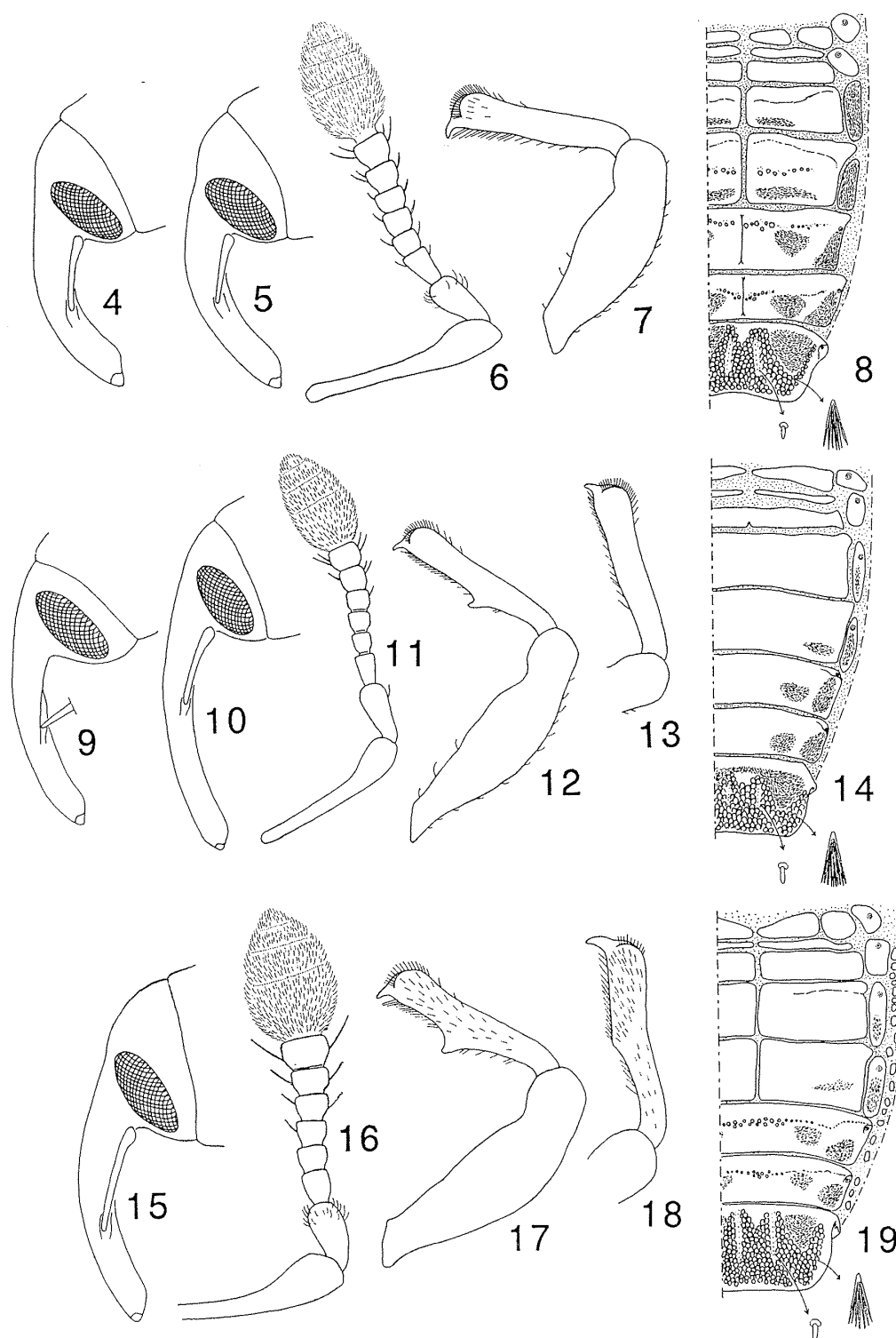
Limnobaris jucunda REITTER, 1910

(Fig. 20)

Limnobaris jucunda REITTER, 1910, Wien. ent. Ztg., **29**: 202 [Ussuri].—HUSTACHE, 1938, Coleopt. Cat., (163): 114.

Length: 3.8–3.9 mm. Breadth: 1.4–1.5 mm.

Male. Shiny black, antennae dark brown, tarsi brown to reddish brown. Head minutely punctate, the punctures becoming larger and denser towards frons. Rostrum robust, nearly as long as pronotum, evenly and weakly curved and slightly becoming thinner towards the apex, shiny and minutely punctate on dorsal surface, with punctures much denser and coarser on lateral surface. Antennae inserted slightly beyond the middle of rostrum, funicle with 1st segment as long as three



Figs. 4-19. *Limnobaris* spp. — 4-8, *L. japonica* sp. nov.; 9-14, *L. albosparsa* REITTER; 15-19, *L. babai* CHŪjō et MORIMOTO; 4, 9, 15. Head, male. 5, 10. Ditto, female. 6, 11, 16. Antenna, male. 7, 12, 17. Fore leg, male. 13, 18. Ditto, female. 8, 14, 19. Tergites, male.

following segments combined, 2nd segment 1.2 times as long as wide and 1.6 times as long as the 3rd, 3rd to 7th segments subequal in length and gradually widening distally, club oval, 1/2 times as long as funicle. Pronotum a little broader than long (8:7), almost parallel-sided from the base to the middle, then narrowing anteriorly in a weak curve, anterior margin weakly biarcuate, 5/9 times as broad as posterior margin which is shallowly bisinuate, disc densely punctate, interstices between punctures about half as broad as the diameter, median impunctate line distinct in entire length. Scutellum oval, longer than broad. Elytra 1.8 times as long as broad and 2.5 times as long as pronotum, a little broader than pronotum, slightly widening from humeri to the middle, broadest at the middle, then narrowed posteriorly in a weak curve, striae narrow, intervals flat, each with a row of minute punctures, each interval with a row of slender whitish scales, but the scales are diminishing in size posteriorly and often fallen off in old specimens. Prosternum densely covered with yellowish hairy scales, but more than half of derm visible between them. Mesepisternum, mesepimera and metasternum densely covered with oblong oval scales. Metasternum and venter densely covered with oblong oval scales on lateral parts, sparsely covered with hairy scales on median parts. Metasternum, basal two and apical ventrites depressed in the middle. Legs with femora and tibiae unarmed, sparsely covered with whitish hairy scales. Second segment of tarsi nearly as long as broad.

Female. Rostrum slightly longer than in male. First and 2nd ventrites not depressed at the middle.

Distribution. Russia (Primorskij kray), China (Heilongjiang—new record), Korea (new record).

Specimens examined. 14 ♂♂, 6 ♀♀, Boug Myong-ri, Dong San-myon, Chun-Chon-gun, Korea, 22–23. v. 1992, K. MORIMOTO leg. 1 ♂, Heilongjiang, N. E. China, 19. vi. 1942, S. ASAHINA leg.

Biology. Adults were captured on a species of sedge by sweeping.

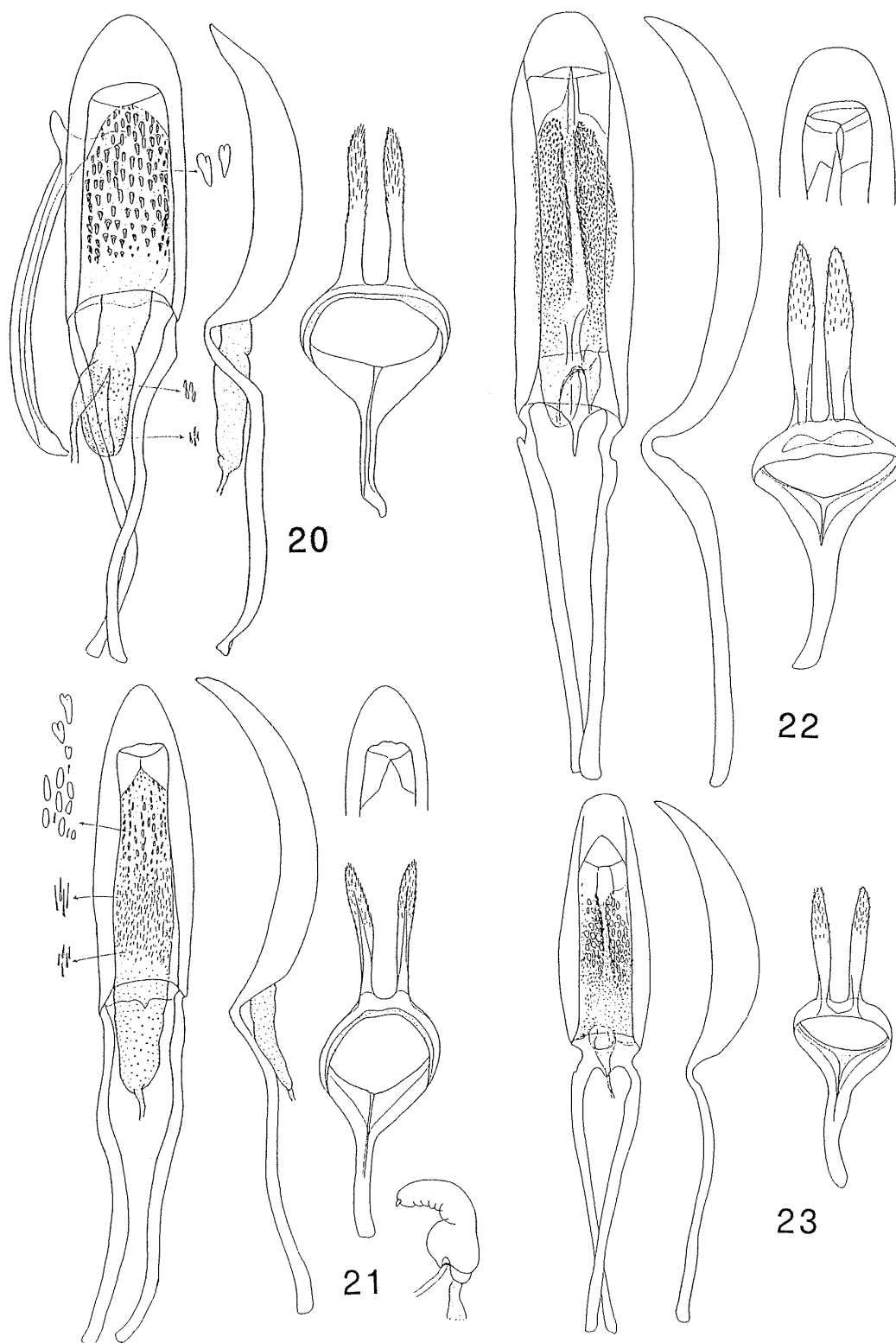
Limnobaris albosparsa REITTER, 1910

(Figs. 3, 9–14, 23)

Limnobaris albosparsa REITTER, 1910, Wien. ent. Ztg., **29**: 203 [Ussuri].—HUSTACHE, 1938, Coleopt. Cat., (163): 113.

Length: 2.8–3.2 mm. Breadth: 1.0–1.2 mm.

Male. Black, antennae and tarsi dark brown. Head shallowly punctate. Rostrum slender, a little longer than pronotum, evenly and weakly curved and subequal in thickness from the base to the apex, shiny and minutely punctate on dorsal surface, the punctures becoming denser and coarser laterally. Antennae inserted slightly beyond the middle of rostrum, funicle with 1st segment slightly longer than two following segments combined, 2nd segment 1.6 times as long as wide and 1.4 times as long as the 3rd, 3rd to 7th segments subequal in length and gradually widen-



Figs. 20–23. Male genitalia and spermatheca. — 20, *L. jucunda* REITTER; 21, *L. japonica* sp. nov.; 22, *L. babai* CHŪJŌ et MORIMOTO; 23, *L. albosparsa* REITTER.

ing distally, club oval, $1/2$ times as long as funicle. Pronotum a little broader than long (10:9), parallel-sided from the base to the apical third, then narrowing anteriorly in a weak curve, anterior margin truncate, $3/4$ times as broad as posterior margin which is shallowly bisinuate, disc densely punctate, interstices between punctures less than half as broad as the diameter, each puncture at lateral sides accompanied with a whitish hairy scale, median impunctate line obsolete. Scutellum oval, longer than wide. Elytra 2.0 times as long as broad, 2.6–2.8 times as long as pronotum, a little broader than pronotum, parallel-sided in basal two-thirds, then narrowed posteriorly, striae narrow, intervals flat, each with a row of oblong-oval whitish scales, apices separately rounded. Prosternum with a deep subapical sulcus at apical one-fifth, densely and coarsely punctate, densely clothed with whitish scales which become longer posteriorly. Lateral pieces of mesothorax densely clothed with whitish scales, but the derm is partly visible among them. Metepisterna densely covered with whitish scales. Metasternum and venter shiny, minutely punctate, each puncture accompanied with a minute whitish hairy scales which become larger laterally on 3rd to 5th ventrites. Legs with femora unarmed, sparsely clothed with whitish hairy scales. Fore tibiae armed with an acute spine at the middle of inner margin. Middle and hind tibiae unarmed. Second segment of tarsi nearly as long as broad.

Female. Rostrum a little longer than in male. Fore tibiae unarmed. Basal two ventrites not depressed at the middle.

Distribution. Russia (Primorskij kray), Japan (Honshu—new record).

Specimens examined. 1 ♀, Tsurutanuma, Utsunomiya City, Tochigi Pref., 13–14. v. 1991, Y. HIRANO leg.; 1 ♀, Mt. Takiyama, Nagi-cho, Okayama Pref., 13. vi. 1987, O. YAMAJI leg.; 1 ♂, Koigakubo, Tessei-cho, Okayama Pref., 20. vi. 1987, O. YAMAJI leg.; 2 ♂♂, 4 ♀♀, Yoshikawa, Kayo-cho, Okayama Pref., 27. vi. 1993, K. NOJIMA leg.; 1 ♂, Ussurijsk Res. (W. border, 130 m), S. Primor'ye, 20.v. 1992, T. NAKAMURA leg.

Biology. The adults can be captured by sweeping of *Carex dickinsii* FRANCH. et SAVAT. (Onisuge in Japanese) in marsh (NOJIMA, personal communication).

Remarks. Among the Palearctic species of the genus *Limnobaris*, only *L. babai* and the present species are known to have dentate fore tibiae in the male, and in addition, *L. dentifer* CHAMPION from Nicaragua also shares this character.

Limnobaris babai CHÛJÔ et MORIMOTO, 1959

(Figs. 2, 15–19, 22)

Limnobaris babai CHÛJÔ et MORIMOTO, 1959, Kontyû, Tokyo, **27**: 153, fig. 5 [Echigo, Honshu].
—MORIMOTO, 1984, Coleopt. Japan Col., Osaka, **4**: 311, pl. 61, fig. 18.

Length: 3.5–4.4 mm. Breadth: 1.3–1.8 mm.

Dorsal surface almost bare, undersurface sparsely clothed with whitish small hairs. Pronotum and elytra a little flatter and broader than in the other Japanese

species. Fore tibiae armed with a large triangular spine at the middle in male, bluntly dilated internally at the middle, scarcely narrowed and fringed with grayish setae thence to apex in female. In smaller females, this dilatation is weak and the

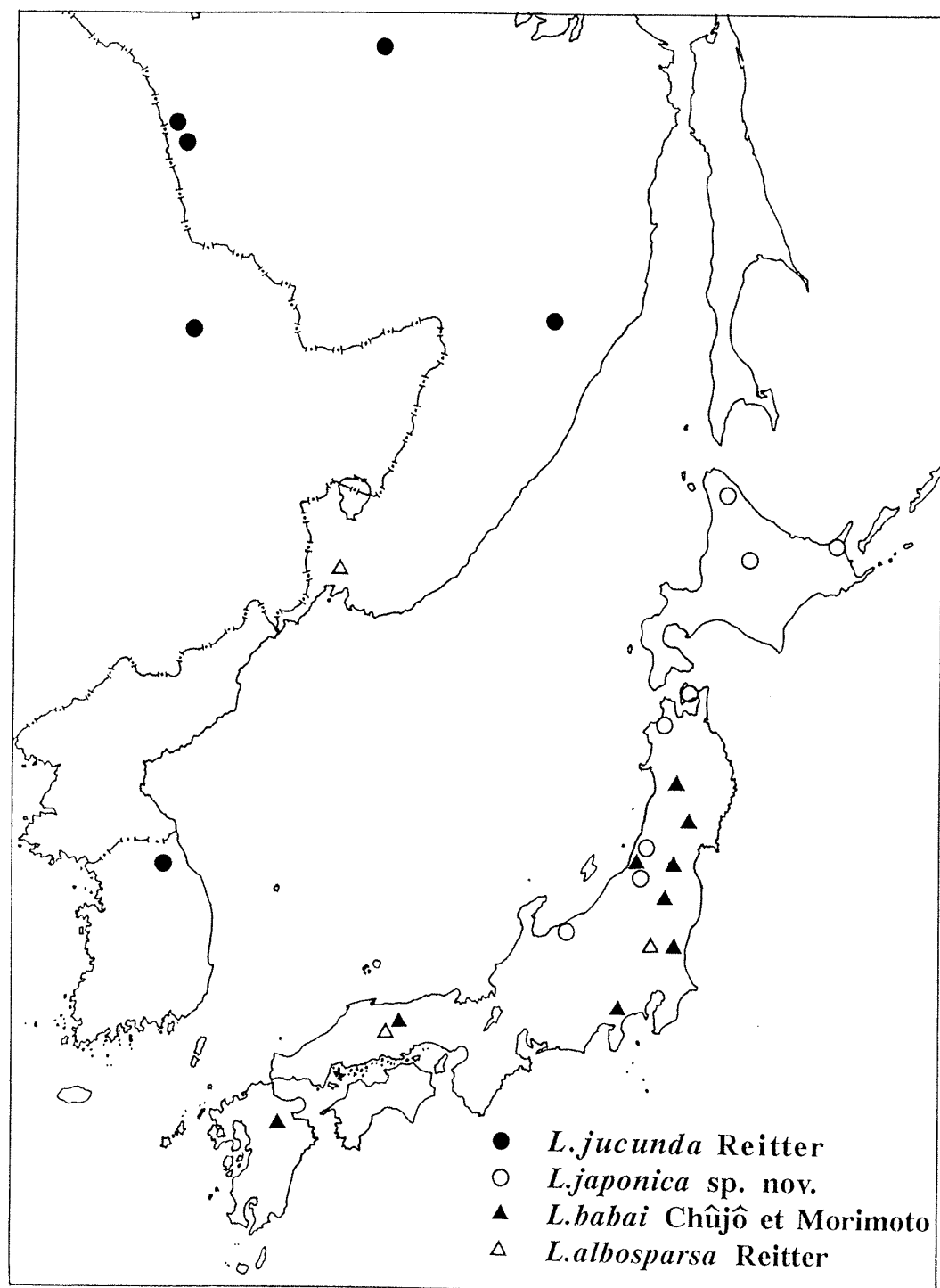


Fig. 24. Distribution of *Limnobaris* spp.

inner margin of fore tibia is almost straight.

Distribution. Japan (Honshu, Kyushu).

Specimens examined. 1 ♀, Kurokawa, Niigata Pref., 30. iv. 1955, K. BABA leg. (paratype); 1 ♂, Numa, Sekigawa-mura, Niigata Pref., 30. vi. 1976, K. BABA leg.; 1 ♀, Manokamiyama, Miyagi Pref., 11. vi. 1976, T. WATANABE leg.; 1 ♀, Komanoyu spa, Mt. Kurikoma, Miyagi Pref., 21. vi. 1983, K. MORIMOTO leg.; 1 ♀, Saikachinuma, Miyagi-machi, Miyagi Pref., 25. vi. 1983, K. MORIMOTO leg.; 1 ♂, Magi-mahiru Natural Park, Ota-machi, Akita Pref., 3. vi. 1989, T. NAKAMURA leg.; 1 ♂, Okami-Satomi, Ibaraki Pref., 28. v. 1988, Y. HIRANO leg.; 1 ♀, Hatonomiya, Fukushima Pref., 28. v. 1988, Y. HIRANO leg.; 1 ♀, Sengoku, Hakone, Kanagawa Pref., 2. v. 1992, Y. HIRANO leg.; 1 ♀, Hosoiike marsh, Mt. Gorimbara, Okayama Pref., 7. vi. 1986, O. YAMAJI leg.; 2 ♂♂, same locality, 10. vi. 1992, K. YOSHIHARA leg.; 1 ♂, Taga, Akasaka-cho, Okayama Pref., 3. vi. 1993, K. NOJIMA leg.; 1 ♂, Chojabaru, Mt. Kuju, Oita Pref., 6. vi. 1978, K. MORIMOTO leg.; 1 ♂, 3 ♀♀, Hi-judai, Kusu-cho, Oita Pref., 9. iv. 1990, S. SASAKI leg.

Biology. The adults can be captured by sweeping of *Carex* spp. in marsh.

Key to the Species of *Limnobaris* in Japan and Neighbouring Countries

- 1 (4) Lateral parts of mesothorax, metathorax and abdomen covered with dense whitish and/or yellowish scales, completely covering the derm; fore tibiae without median spine in male.
- 2 (3) Whitish scales on the underside oval, dense on prosternum, mesosternum, anterior margin of metasternum, and on 3rd to 5th ventrites, scaled area a little narrowed at the middle on 3rd and 4th ventrites; punctures on pronotum smaller, interstices between them a little narrower than the diameter; elytra with a row of narrow scales on a basal third of 3rd to 6th intervals. Japan (Hokkaido, Honshu). *Limnobaris japonica* sp. nov.
- 3 (2) Whitish scales on the underside oblong oval, those on prosternum and median part of 3rd and 4th ventrites hairy, pale brownish, much sparser than on lateral part, so that the densely scaled areas broadly divided medianly; punctures on pronotum denser, interstices between them about half as broad as the diameter; elytra with a row of slender scales on all intervals, but diminishing in size posteriorly and often fallen off in old specimens. Russia (Primorskij kray), China (Heilongjiang), Korea
. *Limnobaris jucunda* REITTER
- 4 (1) Whitish scales denser at most on lateral pieces of meso- and metathoraces and lateral margins of 3rd to 5th ventrites, but part of derm uncovered, the remaining underside with sparse hairy scales; fore tibiae dentate internally at the middle in male.
- 5 (6) Whitish scales very dense on metepisterna, almost concealing derm, dense on prosternum, lateral pieces of mesothorax and lateral margins of 3rd

to 5th ventrites; pronotum with dense punctures, the interstices less than half as broad as the diameter; elytra with a row of oblong-oval scales on each interval; fore tibiae not dilated internally in female; pronotum without median impunctate line. Russia (Primorskij kray), Japan (Honshu)..

- *Limnobaris albosparsa* REITTER
 6 (5) Scales on the lateral and underside sparser and finer, and bare on pronotum and elytra; punctures on pronotum sparser, the interstices about as broad as the diameter; fore tibiae dilated internally before the middle in female; pronotum with median impunctate line. Japan (Honshu, Kyushu)

..... *Limnobaris babai* CHÛJÔ et MORIMOTO

Key to the Species Based on the Male Genitalia

- 1 (4) Median lobe almost parallel-sided except for apex.
 2 (3) Median lobe about 2.6 times as long as broad, with conspicuous thorn-like brown asperities. *Limnobaris jucunda* REITTER
 3 (2) Median lobe about 4 times as long as broad, not thorn-like but prickly-like pale asperities *Limnobaris babai* CHÛJÔ et MORIMOTO
 4 (1) Median lobe broadest at one-third from the base and weakly narrowed anteriorly.
 5 (6) Median lobe narrowly rounded at apex, ventral margin of ostium transverse *Limnobaris japonica* sp. nov.
 6 (5) Median lobe broadly rounded at apex, ventral margin of ostium triangular. *Limnobaris albosparsa* REITTER

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